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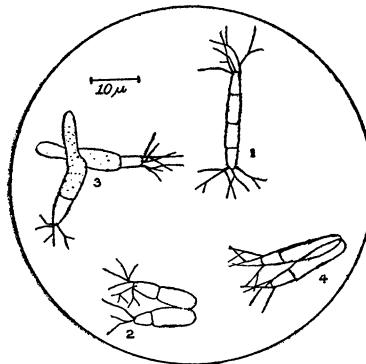
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## DILOPHOSPORA ALOPECURI.

ERNST A. BESSEY.

Last November Dr. J. J. Davis of Racine, Wisconsin, sent to the writer some leaves of *Calamagrostis canadensis* collected in Kenosha County of that State. Among the galls caused by nematodes, for which reason they were sent, were found a few more obscure ones of different origin. At points the leaf was slightly swollen, the swellings taking in the space between two or three ribs and being 3 to 6 mm. long and 0.2 to 0.5 mm. in height. They contain pycnidia in one or two rows between each pair of ribs. They are immersed in the leaf tissue with the exception of a very small area around the ostiole which is without a beak. Usually they are at the upper, occasionally also at the lower surface of the leaf. The pycnidia are carbonaceous, spherical, 160 to 200  $\mu$  in diameter and entirely separate, with-



*Dilophospora alopecuri*, showing spore (1)  
and various stages of germination of  
spores (2, 3, 4).

out a stroma, or sometimes joined together by twos or threes. The spores are borne apparently singly on short sporophores, the long axis of the spore being continuous with that of the sporophore. When immature (but already free in the pycnidium) they are hyaline and one-celled. They soon however become segmented into four cells, the two middle cells becoming pale brown, the terminal cells and appendages remaining hyaline. (See fig. 1.) They are cylindrical or slightly fusiform, with rather truncate ends from which arise two to three usually once or twice forking appendages, tapering towards their ends. The spore may be slightly constricted at the septa. Rarely the spores are three-celled, either with the middle cell alone or the middle and one end cell colored. Exclusive of appendages the spores measure 15 to 20 by 2 to 2.3  $\mu$ , averaging about 17 x 2.1  $\mu$ . The

appendages are 5 to  $7\mu$ , rarely 10  $\mu$  long and about 0.5  $\mu$  in thickness at the base. In germinating the two middle cells become more turgid causing the spore to fall apart between them (Fig. 2). The germ tubes grow directly or obliquely from the middle septum. (Figs. 3 and 4.) The hyaline end cells do not germinate.

In spite of the discrepancies between description and actual structure the fungus was recognized as a species of *Dilophospora*, and agrees in every regard, except a very slight difference in size of spores, with de Thümen, *Mycotheca universalis* No. 456 *D. graminis* Desm. on *Dactylis glomerata*. It also agrees with Desmazières' figures.<sup>1)</sup> Saccardo<sup>2)</sup> gives the measurements as  $10 \times 1.7\text{-}2 \mu$ , but de Thümen's specimens contain spores 11.6 to  $13.3 \times 2\text{-}2.3 \mu$ , while Desmazières, who was the first to observe the spores, gives 12 to 13.3 as the length (1/50 mm. including appendages, these being  $\frac{1}{4}$  to  $\frac{1}{3}$  the length of the spore body) and represents them in his illustration as 15  $\mu$  long. The differences in size being so slight, it does not seem justifiable to consider the American form as distinct.

This fungus was described in 1828 for the first time by Fries<sup>3)</sup> as *Sphaeria alopecuri* and as such is described by Duby,<sup>4)</sup> two years later. In 1840 Desmazières,<sup>1)</sup> to whom as well as to Fries and Duby the original collector had sent part of his material, established for the fungus a new genus *Dilophospora* and applied the specific name *graminis* citing *Sphaeria alopecuri* Fr. as a synonym. He described the spores as one-celled and hyaline in which he has been followed by Corda,<sup>5)</sup> Bonorden,<sup>6)</sup> Fuckel,<sup>7)</sup> Allescher<sup>8)</sup> and Saccardo.<sup>2)</sup> Bonorden suggested that the spores were borne transversely, but this is false.

Fries<sup>9)</sup> in 1849 accepts Desmazières' generic name, but insists upon his own specific name, saying of *Dilophospora*: "Plures species in culmis graminum in terris calidioribus (Typus *D. Alopecuri* Fr. El. sub Sph.) The name should be accordingly *Dilophospora alopecuri* (Fr.) Fr.

<sup>1)</sup> Ann. Sci. Nat. Bot. Ser. I. 14:5-7. pl. I. fig. 3. 1840.

<sup>2)</sup> Sylloge Fungorum. 3:600. 1884.

<sup>3)</sup> Elenchus Fungorum. 2:91. 1828.

<sup>4)</sup> Botanicon Gallicum. 2:694. 1830.

<sup>5)</sup> Icones Fungorum. 5:30. 1842.

<sup>6)</sup> Handbuch der Allgemeinen Mykologie. 227. 1851.

<sup>7)</sup> Symbolae Mycologicae. 130. 1869.

<sup>8)</sup> Rabenhorst, Kryptogamen-Flora Deutschland, &c. 2te Auflage, Bd. 1, Abth. 6. 947-948. 1901.

<sup>9)</sup> Summa Veg. Scand. 2:419. 1849.